PLANT SANITATION
EXCERPTS FROM CURRENT PUBLICATIONS
AND AN OUTLINE FOR A SANITARY
SURVEY CIRCULAR No. 1

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PLANT SANITATION

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EXCERPTS FROM CURRENT PUBLICATIONS

AND

AN OUTLINE FOR A SANITARY SURVEY

SANITATION CIRCULAR NO. 1

WESTERN BRANCH LABORATORIES,
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PLANT SANITATION

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PLANT SANITATION

Introduction

The National Canners Association since its inception has advocated and promoted among its membership a high standard of excellence both in quality of finished product and field and factory conditions of production.

It is a fundamental principle of modern food production that canned foods should be prepared and packaged under sanitary conditions. Home and cannery concepts of sanitation have advanced continually with human knowledge. Some conditions which represented common practice in former years are no longer considered acceptable.

The United States Food and Drug Administration through various activities during a period of many years has endeavored to ensure that packaged foods should be prepared and packed under healthful and sanitary conditions. The new Federal Food, Drug and Cosmetic Law enacted in 1938 provides that a food shall be deemed to be adulterated "if it has been prepared, packed, or held under insanitary conditions whereby it may have become contaminated with filth, or whereby it may have been rendered injurious to health." This broadening of the concept of the term "adulteration" is of great significance to food manufacturers because it permits action to be taken against a product solely because of the existence of insanitary conditions during preparation and packaging.

The purpose of this circular is to bring to the attention of canners some information which is now available and which may serve as an introduction to further consideration of the matter.

As a general statement, there is reproduced herein a paper entitled "Trends in Plant Sanitation," which was recently published in Food Industries under the authorship of Andrew J. Krog, Health Officer at Plainfield, New Jersey.

There has recently been published by the Food and Drug Administration "Food and Drug Circular No. 14" entitled "Microanalysis of Food and Drug Products." This circular deals largely with detailed laboratory procedures used by the Food and Drug Administration in the examination of foods for the detection of various types of adulteration. However, in Chapter 2, the subject of plant sanitation is discussed at length, evidently intended to serve as a guide to Food and Drug Administration inspectors in the performance of their duties. Thus, it is a statement on plant sanitation as it applies to the manufacture of foods in relation to the federal law. The excerpts chosen from Chapter 14 also present certain instructions of the Administration to its inspectors. This material as well as the statement on plant sanitation has been reproduced in this circular in the belief that direct knowledge of the views of the Food and Drug Administration on these matters will be helpful to canners in their desire to meet the requirements.

As an approach to a study of the problem of plant sanitation in canneries, sanitary surveys of several plants were recently conducted by a trained sanitarian. In making that survey an outline arranged in questionnaire form was used. This form is divided into two parts -- First, a general sanitary survey of the canning plant; and, second, a statement of information regarding the canning of each specific product. While these forms were intended primarily as a check list to be used by the sanitarian, they also provide a convenient list of the many factors which should be included in a comprehensive sanitary survey. While these forms were prepared for a specific survey and greater experience may indicate revision, they are included in this circular for ready reference.

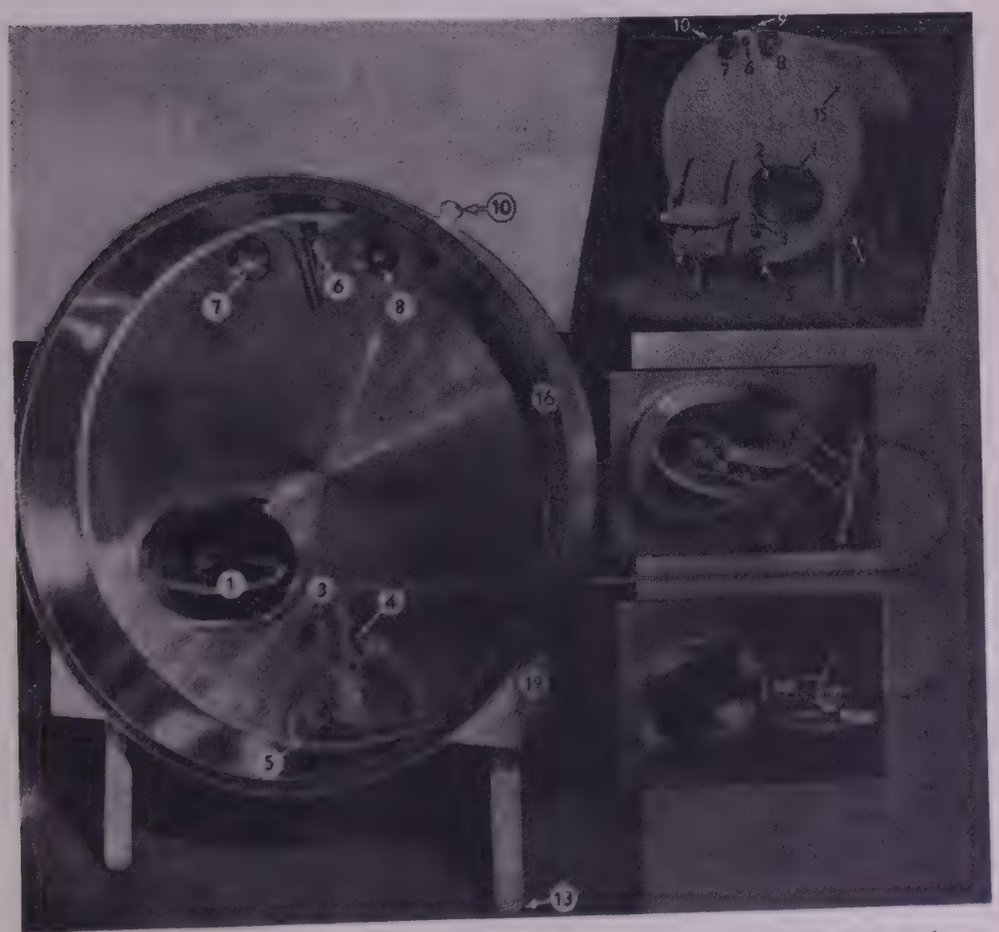
Trends in Plant Sanitation

Close attention to sanitation in all of its many aspects has become a must for progressive processors. Here a health officer explains why and gives practical pointers on building and equipment design and employee cleanliness

By ANDREW J. KROG, Health Officer, Plainfield, N. J.

SINCE the adoption of the present Federal Food, Drug and Cosmetic Act in 1938, and the subsequent enactment of similar legislation by various states, the entire picture of sanitation in food plants has been viewed with a different aspect by Federal, state and local control officials. Formerly, the inspector was chiefly concerned with the obviously apparent unsanitary conditions, such as old accumulations of food products or ingredients in or upon equipment, dirty floors, walls and ceilings, the methods of storing food products or their component parts with respect to refrigeration and possibilities of contamination by insects, rodents and other forms of filth.

The important aspect of technically guarding health sanitation in foods has, within the past few years, been given new significance. The changes in inspection technics and plant requirements have been revolutionary throughout the entire field of the food processing and distribution industry. The remarkable development evidenced during the last 25 years in the sanitary methods of handling and processing milk, ice cream and allied products may be cited as an example of what can, and will be, expected from other food industries.



Sanitary features incorporated in modern food processing tanks: (1) Manhole is large enough to permit entry for cleaning, and all parts of cover are accessible. (3) and (10) Thermometer and volume gage connections have sanitary external threads and ground joint seat which tightly seals off inside wall of tank. (4) Agitator is of rotary-seal type without packing and has oilless bearings. All surfaces are accessible for easy cleaning. (5) Outlet valve is flanged to tank through a short, permanent sanitary joint, making it unnecessary to remove valve body for cleaning purposes. Plug of valve is removable, permitting swabbing, vertically and horizontally, through valve and outlet. (6) Inlet is of sanitary design and removable for cleaning. (7) Peep holes are sloped for perfect drainage and are removable for cleaning. (12) and (13) Supporting members and legs are high enough to permit easy cleaning of floor underneath. Legs have ball feet.

Control Now Scientific

In spotting unsanitary conditions, the inspector in the past depended upon his visual acuity and keenness of smell, and upon his ability to feel deposits of slime or other filth in hidden portions of equipment. The men now employed in this capacity by the official agencies are trained technologists, dependent upon the microscope, the laboratory, the sample container and other scientific methods and equipment in their endeavors to assist the food industries to produce more wholesome and better products from the sanitary and nutrition standpoints. They are constantly on the alert for insidious forms of contamination, such as bacteria, molds, rodent and insect filth, metallic or other forms of dangerous adulterants and other factors that are not readily apparent but which affect the safety or wholesomeness of the product.

It is a regrettable fact that at the present time the methods of manufacture and handling of foods in many establishments in the United States are frequently carried out under conditions which are conducive to the contribution of filth and other forms of dangerous contamination to foods.

Unfortunately, this condition is due in great part to the inability of food plant operators to obtain satisfactory new equipment because of wartime restrictions, to the difficulties experienced in employing and holding properly trained personnel and to the changes that have taken place in the various methods of processing and preserving foods.

Standard type sanitary flange and smooth rubber gasket for connecting glass fittings. Note the tight seat on the resilient gasket, minimizing the possibility of accumulation of deposit in crevices and seams.

As a result of the favorable progress of the war effort, it seems reasonable to believe that new equipment and materials for plant-construction purposes soon will be available without restrictions. And food plant operators, architects and equipment engineers planning new equipment or structures, should seriously consider the present-day trends in sanitary methods of construction.

Building Construction

The building, in general, should be adequately lighted, well ventilated and spacious enough so that sufficient "elbow" room will be available for equipment and personnel. All window frames, sashes and doors should be of metal or be metal covered. Toilets, washrooms, miscellaneous store rooms and rooms used for receiving garbage, offal and other byproducts not intended for human consumption ought to be adequately closed off or separated from the parts of the building where food processing or packaging is actually carried on.

Food plant floors must be impervious to moisture and constructed of materials that are rugged enough to carry the type of traffic they must bear without cracking and chipping. They also must be resistant to the corrosive action of the various acids usually associated with food processing, such as glacial acetic acid and others used in cleaning solutions, phosphoric, acetic, tartaric or citric acid solutions and other weak acids found in fruit and vegetable products. Alkalies, too, are an important factor in floor deterioration. Among these may be considered various strong cleaning compounds composed of caustic soda or potash and all other allied products highly alkaline in nature, as well as weak solutions of carbonates, bicarbonates and phosphates. All corners and junctions between walls and floors should be rounded to facilitate cleaning. Attention must be given to satisfactory slopes leading to sufficient drains connected to bell-trapped drainage systems in order that proper washing and flushing can be carried out.

The walls should be of impervious material and resistant to the same destructive agents as the floors, to a point above the maximum splash height. They ought to be smooth and of material that can be cleansed readily. Ceilings should be composed of easily cleaned material which will not absorb condensation. Ledges, flues, window sills, duct openings, and so forth, should be beveled in such a manner as to prevent their use for the storage of tools and seldom-used articles, and to prevent the accumulation of dirt.

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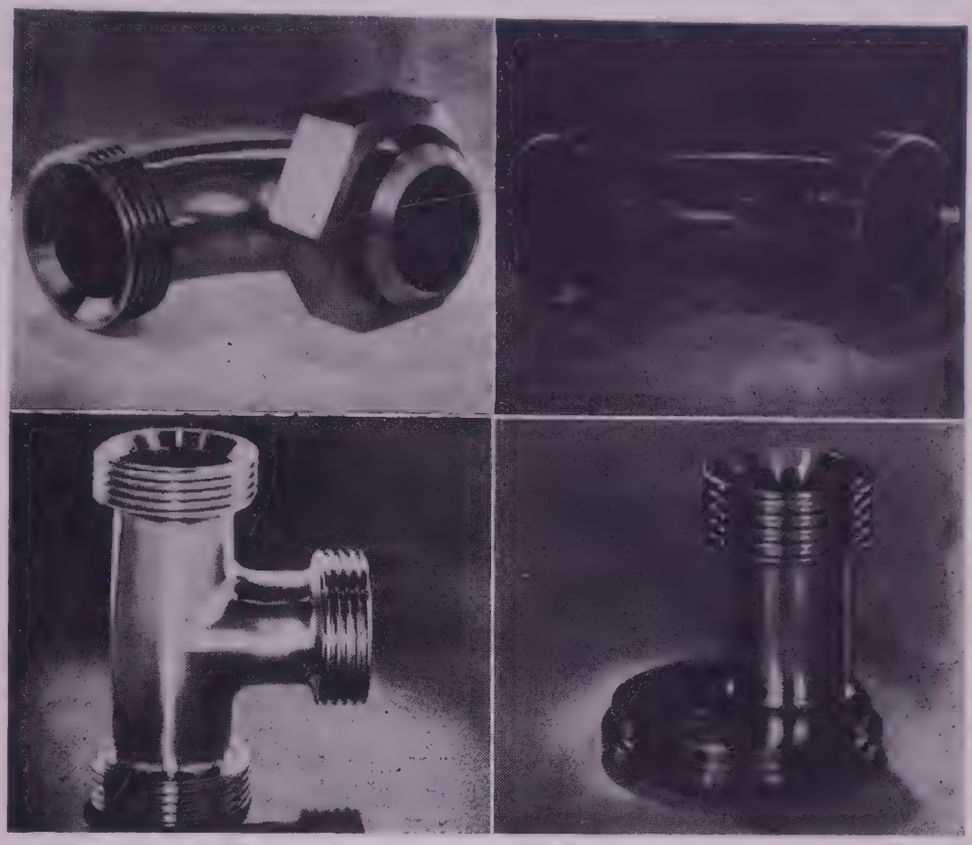
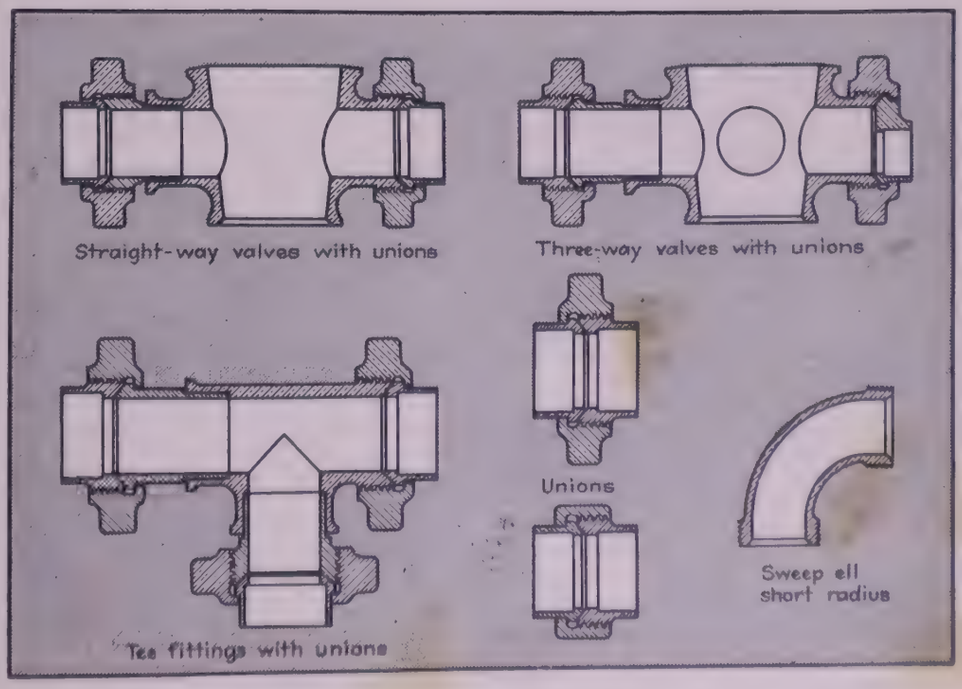


Various types of approved fittings for metal piping, with cross sections (below) to demonstrate sanitary design. Top left: Elbow, 90-deg. sweep, one end threaded, other with union connection. Top right: Elbow, 90-deg. sweep, both ends threaded. Bottom left: Tee, all connections threaded. Bottom right: Reducing ferrule for close hookups.



Cross sections of different type of approved fittings for sanitary metal piping.

Good Lighting a Must

Establishments normally dependent upon daylight ought to be constructed so as to have an unobscured window or skylight area of not less than 25 percent of the floor space, so arranged that every part of the room receives light of not less than 10 foot-candles in intensity. Where artificial light is contemplated, the same minimum degree of light intensity should be available at all times, and for operations requiring any considerable visual control such as inspection of quality and color, a minimum of 30 foot-candles is desirable. Daylight type fluorescent and incandescent lighting, or normal white incandescent illumination, is preferable to mercury-vapor lamps, which are prone to cause color distortions in products being processed.

In certain types of food plants, the natural movement of air due to convection can be made sufficient for satisfactory ventilation by adjustment of windows, transoms, ceiling vents and doors. Where air conditioning or forced-draft systems are used, they should be so constructed as to permit easy access for cleaning of accumulations of dust and grease, and the intake should be so located and constructed as to prevent the sucking in of smoke, dust and other undesirable contaminating materials.

Watch the Piping

Adequate and properly installed plumbing is an often neglected factor in food-plant construction. Potable water installations must be so constructed that permanent water outlets, hoses and other temporary outlets cannot be immersed or come in contact with the contents of tanks, washers, sinks, sumps or other equipment, thereby eliminating the possibility of water-supply contamination through back syphonage. Under no circumstances should there be any cross connections or other hookup between potable water supplies and water of an unknown quality. Sewer or other waste pipes ought not to cross over any area where foods are stored or processed. All piping should be covered in such a manner as to prevent contamination of foods by condensation and drip, and where necessary, easily cleaned and properly drained drip trays should be installed. The use of lead pipe for conveying water, foods or food materials is not to be tolerated. Where private wells are used, they ought to be constructed with tight casings and crowns in such a manner as to prevent contamination by ground seepage, flooding and vermin. The sanitary quality of the water must be checked before use and at frequent intervals to insure freedom from contamination.

Waste systems should be connected to an approved type of sewage disposal system. Where this is not feasible, proper septic tanks or leaching basins ought to be constructed. Fly and mosquito-breeding nuisances, as well as grossly insanitary disposal methods, are often encountered in country-located plants. In some instances plant waste has been permitted to flow by gravity from a pipe to an open cesspool or ditch.

Pest Preventives

In the planning of new food plants, the architect must take into consideration rodent-proof and insect-proof designs and materials. Hollow walls and closed spaces under shelving, tables and other equipment must be avoided to eliminate insect and rodent harborage or breeding places. It is important that wall openings around pipes and conduits be tightly closed with rodent-resistant material, or be protected with metal shields.

Metal-lined storage rooms and food receptacles with tightly fitting covers also are essential for the prevention of contamination of the contents by insects or rodents, and all doors and windows should be constructed so they can be properly screened.

Employee Cleanliness

Sufficient toilet facilities must be provided for employees of both sexes. Toilet rooms should be so located as not to open directly into any room used in the handling or preparation of food, and they ought to be ventilated directly to the outside air by means of transoms or windows, and if the latter cannot be accomplished, ventilation by means of mechanical systems or ducts may be considered.

The toilet room can be connected to an interposing room which may be used as a utility room—not used for food-handling purposes—such as a dressing room, lounge or locker room, if self-closing doors are provided for each room.

An adequate number of lavatories with paper towels and soap dispensing devices is a basic necessity in each toilet room. The provision for a sufficient number of conveniently located lavatories throughout the plant is also essential in order that employees contaminating their hands with filthy materials may have easy access to hand-washing facilities before they again handle food products.

Equipment Design

No part of any equipment that comes in contact with food products should be composed of antimony, cadmium or lead alloys. Smooth seams with rounded joints and corners and satisfactory drainage are necessary for proper cleaning, and all pockets, recesses and dead-ends should be eliminated. All piping ought to be in short, easily dismounted lengths, with tight seams and sanitary type fittings, so connected as to permit easy removal for cleansing. Valves, pumps and other accessory equipment also should be so assembled that all parts with which food comes in contact can be taken apart easily and cleaned. Metal rotary seals are recommended instead of the conventional type of unsanitary stuffing boxes.

In locating equipment, it should be spaced so as to permit easy access to all parts and to the floors and surrounding walls to allow satisfactory cleaning. It is preferable that all stands upon which equipment rests be equipped with ball-type feet and be of sufficient height to permit sweeping and washing of the floor underneath. Certain types of heavy equipment necessarily must rest on solid bases. These bases must be tight at their junction with the floor so as to prohibit the seepage underneath of water and other liquids.

A sufficient number of steam and hot and cold water outlets, as well as wash tanks large enough to accommodate sanitary piping lengths and other equipment, should be conveniently located in all processing rooms.

The entire food plant and every piece of equipment in it has a definite bearing on the physical and sanitary quality of the products produced or processed. Improper structural planning or inadequate or misfit equipment is economically unsound and results in trouble.

The application of these objectives in plant and equipment planning will be conducive not only to better plant efficiency but to products of higher quality.

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PLANT SANITATION *

A. Object

Fundamentally, the noun "sanitation" and the adjective "sanitary" have a health connotation, and a sanitary condition, strictly speaking, is one which provides for freedom from contamination with injurious substances, particularly infectious micro-organisms. However, modern concepts of food and drug control undoubtedly go beyond the limited scope of this definition to encompass considerations of the maintenance of conditions which exclude the incorporation in foods and drugs of extraneous elements which are obnoxious and repulsive regardless of their lack of importance as agents of disease. Accordingly, an establishment operating in a manner to invite, or permit, contamination of its output with foreign matter properly classified as filth may be described as insanitary. The objectionable matter may be the excreta of man or animal or it may be in the form of maggots, worms, insects, and insect parts, some forms of trash and other material which disgustingly defiles the product. In many instances the contaminants are macroscopic and detection of avenues of their ingress into the product depends only on keen powers of observation and common sense. Other cases, involving microscopic filth, call for appraisal that invokes the inspector's knowledge and appreciation of invisible routes of distribution.

The likelihood that the factory output may be polluted or contaminated with filth is in proportion to the figurative distance between the source of filth and the product under preparation. An objective of the sanitary inspection is to measure this distance in terms of space, time, or vehicles of transmission. The distance between foul toilets and food may be great in space but significantly shortened by frequent and rapid movement of the carrier.

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* Reproduced with permission from Food and Drug Circular No. 1, "Microanalysis of Food and Drug Products", Federal Security Agency, Food and Drug Administration, 1944. (Chapter 2, p. 3-10 incl.)

The most obvious is not always the most important. The problem is to differentiate between untidiness or disorderliness and conditions which contribute filth or the causative agents of disease. To quote Dr. Haven Emerson: "Let us deny ourselves the emotional indulgence of compaigns against non-essentials. Distinguish between the annoyance of noise, the unesthetic effect of untidiness, and the violence to health and safety in gluttony, self-drugging and overcrowding. Let us get worked up over spitting, but leave litter abatement to housekeepers. Lend a sympathetic ear to those who believe their irritability results from other people's noise but raise particular hob if any privy is insanitary. Hold to the course of essential sanitation before sharing with those who fuss over outdoor dustiness and smells and robust racket." There may be a difference between plain dirtiness and insanitation. For instance, walls, ceilings, window glass, and door frames may be sadly in need of scrubbing but their unclean state is relatively unimportant as contrasted with the objectionable contribution made by flies, rats, and the behaviour of personnel. Lunch containers, pop bottles, discarded clothing, and loose storage of surplus equipment are signs of poor management, but not necessarily sources of filth. A foul odor is a clue to the existence of something wrong but of itself is not evidence; the source and the cause must be found.

It is not necessary that the inspector be a bacteriologist, entomologist, parasitologist, or a sanitary engineer, but it is necessary that he make his inspection with some of the combined viewpoints of such professions. The burden of proof is to demonstrate routes of filth contamination and not to show that the establishment and its premises resemble a junk pile. Bacteriological concepts are helpful in appraising potentialities of infection with disease organisms or contamination with filth confirmed by bacteriological procedures.

B. Sources and Routes of Contamination

In enumerating the factors or elements to be evaluated in a sanitary inspection, it appears logical to discuss under one major heading the sources of filth and routes of contamination of primary importance and under another heading those features which are secondary but nevertheless important in filling out the picture. Matters of personal hygiene on the part of employees, prevalence of rats, mice and other vermin, incidence of flies, utilization of unclean equipment and polluted water or ice supplies, and the use of unfit raw materials comprise the first group.

The human element, although most difficult to control, cannot be subordinated to other factors in a sanitary appraisal. Man, en masse, is not clean. Civilization and education have taught decency but where education lags insanitary practices continue. In many large-scale operations, food handling is done by those who are not enlightened on the principles of personal hygiene. It is reasonable to demand that the food handler have clean hands, that he refrain from committing nuisances which spread filth, and that he acquire a consciousness that substances for human consumption are being prepared, to the end that his activities not defile those products. Medical certificates possessed by employees are no guaranty of good behavior and their ownership may be viewed with skepticism until knowledge has been obtained regarding the type of examination which led to their issuance and the length of time they have been held. In matter of dress, while there may be some transference of filth from clothing to the products handled, criticism of employee's attire should not unduly influence the conclusions reached regarding sanitation. Clean aprons, smocks, and caps have the advantage of creating in the workers' minds the attitude that they are clean, that dirt becomes quickly apparent on such garments, and that they should conduct themselves in accord with their dress. The inspector will undoubtedly give proper weight to exhibitionism, compliance with reasonable and decent standards, and displays of dirty attire that may

have significance. Most sanitary codes contain prohibitions of human misconduct. However, such acts are transitory and difficult to detect by inspection. Efficient and continuing supervision is the remedy. The inspector can ascertain whether such supervision is provided for and whether the supervisor is fitted for his or her job.

From the beginnings of sanitary control efforts have sporadically been directed toward the elimination of rats and mice. Nevertheless, it has been estimated that in any given community the rat population equals that of the human inhabitants. Specific charges in the indictment of the rat as a destroyer and polluter of food might be multiplied indefinitely. Suffice it to say that the rat stands guilty as charged and consequently merits careful attention in any worth-while sanitary inspection. Accumulation of fresh excreta, gnawings, rat runs, and damaged merchandise provide evidence of the prevalence of these invaders. Examination of the excreta will not only tell that infestation is occurring but will inform as to the extent and, from the size of the pellets, as to the existence of rat families. Attention to the existence of structural, incidental (furniture, fixtures, and equipment), and temporary (rubbish) harborages will frequently throw light on the possibilities of infestation. Hairs and excreta represent the types of filth sought as confirmatory evidence of depredations by rodents. If invasion by rats and mice cannot be completely controlled, it is obvious that raw materials and finished products should be stored to prevent access of the pests. Evidence of failure to provide adequate protection of the food or, better yet, evidence to show actual contact, furnishes demerits which weigh heavily in the sanitary appraisal.

Flies in appreciable numbers in a food establishment constitute two-fold evidence of insanitation, since these insects have been shown to be carriers of filth and infection and their presence denotes the existence of putrescent or decaying matter in which they breed. Large numbers of flies indicate the

presence of dunghills, unprotected latrines, or fermenting waste piles. The inspection should disclose the source and establish the evidence to show the relationship of flies to filth contamination of the food. In some instances confirmatory laboratory evidence can be obtained through the finding of insect parts in the finished product. The fly menace to the maintenance of sanitary conditions is a real one, but the evidence should be specific and reasonably detailed without recourse to such words as "teeming" or "swarming" unless conditions are so bad that no other terms apply. Adequate screening is, of course, the principal means of control. Fly poisons are not particularly efficient and may be a source of dangerous contamination. Fly ribbons and fly paper may be used to advantage, but are unsightly. Chemical repellents are useful on waste piles but all recognized control measures are of no avail if conditions are generally insanitary. Dirty sinks, cesspools, open sewers, soiled containers, and decaying waste must be eliminated if control is to be truly effective.

Dirty utensils and equipment are a reflection of letdown in sanitary control. Some discretion is called for in determining to what extent the existence of pans and buckets with loose seams containing food residues, wooden equipment, soiled towels, and wash cloths may be cited as sources of filth. Certainly their use is to be decried and in connection with some products they assume an importance as vectors of bacteria which on laboratory examination serve to condemn the product. Generally, the disclosure of improperly cleaned equipment supports more direct evidence of filth. Whether or not utensils are dirty naturally depends on the facilities provided for cleaning them and a full evaluation of the sanitary picture will take note of the presence or absence of suitable water supplies and detergents. Disinfection of equipment usually means chlorination. This is to be recommended in food plants but not at the expense of thorough cleaning. On the other hand, failure to use chlorine is not of itself always a cause for condemnation. Too often hypochlorite

solutions are used like cheap perfume on surfaces that might better be washed. Chlorine has a legitimate use in maintaining sanitary conditions but should be applied to clean surfaces and used in effective concentration. The use of a steam hose is often resorted to for the treatment of heavy metal equipment. There is no reason to disapprove of the procedure but there is reason to belittle its efficacy as a disinfecting method, since the temperature reached by the spraying of flowing steam on cold metal is hardly sufficient to have much effect as a germ killer. Probably the best way to cope with the equipment disinfection problem is to maintain the equipment in clean condition by frequent and thorough washing, thus reducing to the minimum the numbers of organisms to be destroyed.

There should be little excuse for the use of polluted water in a food establishment. The bacteriological test for pollution is simple and will ordinarily be made by consulting laboratories for a reasonable fee or by local health agencies who may be in position to render such service. Except in rare instances, it may be assumed that a city water supply and ice manufactured from it are free from pollution. If water from a city supply is not available it is pertinent to inquire regarding the sanitary quality of the water obtained from private wells or other sources. Procurement of water from open streams is not unknown. On general principles, since surface waters are practically always subject to intermittent pollution, the practice of using river or creek water constitutes an adverse item in the sanitary inspection report. While the use of polluted water may serve to add soluble filth to the food or to contribute a health hazard to those foods eaten uncooked, the difficulty, without the services of a nearby laboratory for the prompt examination of samples, lies in enforcement or compulsion of reforms. The burden then rests heavily upon the inspector who is called upon to exhibit his talents as a sanitary engineer. Attention should be given to possibilities of surface drainage, seepage from cesspools, pollution by animals and from

sewage disposal; the inspector should ascertain the constancy and the degree of pollution. The gravity of the danger arising from a polluted water supply is something to be appraised in each case, taking into consideration the question of whether it is used in direct contact with the food or merely for washing down equipment. Proper control of the private water supply obviously resides in the location of a source of pure water, the maintenance of well-recognized safeguards against its contamination, or the institution of treatment such as chlorination.

From a broad viewpoint of plant sanitation, the fitness of the raw materials used is an item for consideration. Admittedly, evidence on the degree of infestation of fruits, vegetables, fish, and other commodities, serves to prove more directly contamination of the food previous to its entry into the plant. Nevertheless, the negligent and indiscriminate use of polluted or insect-and worm-infested raw material adds evidence to prove failure to observe proper sanitary measures. The impossibility of obtaining fish free from parasites or fruits and vegetables free from infestation may be recognized but a proper sanitary inspection will not overlook the effort, or lack of effort, exerted by the management to eliminate the filth in the process of preparing the finished product. In instances such as those where shellfish are obtained from polluted areas or vegetables are harvested from areas subject to sewage irrigation the inspection is automatically extended to include such evidence.

C. Supplementary Sanitary Features

The factors so far discussed are those likely to pollute or contaminate directly. However, the sanitary picture is not complete without information regarding those other features which contribute to the existence of insanitary conditions. For the most part, these comprise service facilities and structural features. Again to quote Dr. Emerson: "We cannot consider ourselves a civilized nation, nor imagine that we have attained even the safety of the

Indian nomad with his shifting tepee, until each settlement, shack, house, or place of human habitation and use is so equipped that family and friends, guests, laborers, and travelers can meet the calls of nature without soiling the spot of land they occupy with infecting and infesting organisms."

This quotation bespeaks the importance of the toilet in any sanitary set-up. It may not be necessary to specify the number of toilets which should be provided but those installed should be readily accessible. Inaccessibility leads to the committing of nuisances. To be sanitary it is not required that toilets be flush type connected with a sewage disposal system. Privy vault toilets are acceptable if properly constructed and used so that filth is not transferred to the product prepared in the establishment. It is hardly necessary to emphasize the need for cleanliness of the toilets in view of their importance as potential sources of pollution. They should be well screened and equipped with tight walls and floors and with self-closing, tight-fitting doors.

Washing facilities rate with toilets as a prime essential for the personal hygiene of workers. They should be adequate in number for the needs of the employees and should be installed in conspicuous locations so that the employee does not have to hunt for a place to wash his hands. Running water, heated if possible, is essential. The barrel or tub into which all employees immerse their hands serves no good purpose. Soap in some form should be provided. The matter of towels gives rise to debate. It is better to have none than to present for use a dirty community towel long since viewed with disapproval by public health officials. Paper towels, although expensive and apt to be wasted, are in keeping with modern sanitation. To the extent that unclean toilets and lack of washing facilities provide definite possibilities for the pollution of the output of the plant, they constitute important features of the plant sanitation.

No sanitary inspection is complete that omits attention to the plant

surroundings. In actual practice the inspection starts with a survey of the adjacent premises. Manure piles, accumulations of plant waste and pools of stagnant water, all of which furnish breeding spots for insects, sewer outfalls in position to pollute the water supply, dilapidated wharves, vacant and abandoned shacks and litter and rubbish heaps, all affording harborage for rats, are elements which singly or in combination will lower the level of sanitation in the establishment. Whereas it is hardly possible to state categorically that nearby dwellings are a menace to plant sanitation the nature of those dwellings and their capacity to produce dogs, cats and stray children to roam at will through the plant are matters for appraisal. If the inspection discloses that dwellings are a menace to sanitation the report should show clearly in what way the pollution occurs. In areas where oysters are grown, or plant products such as water cress are produced, pollution attributable to drainage from barnyards, toilets, pig pens, and the surrounding terrain, is to be considered. In evaluating the fitness of an area for food production, conditions should be taken at their worst and not their best. Possibly it is superfluous to state that evidence regarding surrounding premises is primarily background for the picture containing more vivid elements.

To the extent that plant structure has a bearing on the likelihood of rat infestation or interferes with proper cleaning this feature becomes important. However, it is a basic precept in food sanitation that clean products can be produced with clean methods in an old and, at first impression, unfit, building whereas beautiful buildings are totally without effect when insanitary procedures are followed. Perhaps the greatest concern is with the arrangement of equipment and installations to permit proper cleaning and with screening and rat proofing. Generally it may be borne in mind that the type of buildings and the materials of which it is constructed are of secondary importance.

A discussion of plant "cleanliness" reverts to previous discussions of differentiation between unclean conditions and those which render a product

filthy or dangerous. There is the possibility that dirty floors, walls, ceilings, benches, and chairs may contribute filth to products prepared in the plant but the route of contamination is indirect. A keen sense of values is required of the inspector. What might constitute danger of filth in one type of plant would be of no great significance in another. Failures to provide water under pressure, steam, brooms, and mops and, when they are provided, to use such facilities frequently and with intelligence, build up a story depicting an improperly maintained establishment. The importance of such failures in any given case will depend upon circumstances and the information obtained to show their connection with contamination.

Adequate light and sanitation are requirements of all sanitary codes. Just how much light and fresh air may be deemed adequate for the comfort and well-being of employees is a question for specialists in that field. From the sanitary viewpoint the amount of light provided should be that needed to sort out unfit materials and see the way to do a clean job. Apart from the psychological and human physiological aspects, sufficient exchange of air should be maintained to dry out damp areas and thus hold in check moldiness and the development of insect pests. Actually lack of light and fresh air do not directly establish insanitary conditions. As items in a report they are worthy of note for the effect that failures in this connection have on the operations of the plant.

Waste disposal is definitely an important factor in sanitation. Improper disposal may merely create an unsightly and odoriferous nuisance. It is more likely to create a breeding place for rats and vermin. Obviously in the operation of some food establishments, an oyster shucking house for instance, waste will unavoidably accumulate. The waste disposal problem must be viewed with a practical eye and appraisal made by giving due weight to the probabilities and improbabilities of pollution or contamination from that source. Certainly when the refuse pile putrifies or ferments, breeds flies, or serves as

a harborage and food reservoir for rats it must be given a high rating as an insanitary factor.

In considering sanitation of growing or producing areas the discussion moves from sanitary "inspections" to sanitary "surveys". The contributing sources become more widespread and may vary according to weather conditions. Such surveys ordinarily cannot be made by a single inspection. They require sufficient time to obtain data under all conditions and may call for substantiating laboratory findings. Ordinarily a sanitary survey of a water shed, a shellfish-producing area, or a farm or series of farms producing dairy products or vegetables is a job of considerable magnitude and not likely to be undertaken on a routine regulatory basis.

D. Bacteriological Aspects

A sanitary inspection is usually accompanied or followed by the collection of samples. Where the extraneous matter to be sought by laboratory methods is macroscopic the good judgment of the inspector, based upon his direct observations, will dictate a proper collection of factory samples. To obviate misunderstandings relative to the collection of samples for bacteriological examination a few comments are presented regarding the usefulness and limitations of coliform bacteria as indices of pollution and possible danger to health. The coliform group is probably much overworked as an index of pollution, but when viewed in its proper perspective has great value in pointing the way to possible sources of contamination. This group of bacteria, comprising known species of fecal origin and species which may or may not have their natural habitat in the intestines of warm-blooded animals, is ubiquitous and its distribution in nature cannot be restrained to that degree which permits dogmatic conclusions that the presence of any number of the group is sure-fire evidence of pollution. In order to interpret the findings of Escherichia

coli, the member of the group of known fecal origin on which regulatory actions are sometimes taken, a background of correlative data is needed. With knowledge that crabmeat and shelled nuts are free from Esch. coli as they start through the processing plant this organism serves satisfactorily as evidence of pollution when such evidence is supported by inspectional data to explain the method of its access to the food. In the control of oysters and water it is also useful with certain limitations. Examination of a food product for the presence of Esch. coli is of value only when the history of the product is known or can be ascertained. Similarly, the examination of specimens from a plant is of value only when there is evidence, or when evidence can be obtained, to indicate pollution with the excreta of warm-blooded animals, including man. It must be borne in mind that the test for Esch. coli is a test for fecal pollution.

Where there are considerations of possible danger to health in the pollution of a food product thought is directed toward the likelihood of finding the causative agents of the so-called filth diseases such as typhoid and paratyphoid fever, bacillary dysentery, amebic dysentery and gastro-enteritis (food poisoning). The detection of such pathogens is difficult, indeed, rarely possible and Esch.coli, not ordinarily regarded as a pathogenic organism, must be relied upon as an index of danger. It is then reasonable to argue the well-established principle that substantial numbers of Esch. coli with adequate inspectional evidence to point out the probable source indicate a potential danger in the consumption of the food. The points to which this discussion is directed are that inspectional evidence should throw light on the avenues of pollution, that correlative studies should lay the basis for proper interpretation and that sampling should be carried out with full appreciation of the nature and purpose of the bacteriological examination.

Following the acquisition of the data during the sanitary inspection a report must be submitted to place on record a complete picture of the elements

which characterize an establishment as insanitary. This means coming to the essential points promptly and by careful selection of language with the avoidance of lurid and extravagant terms depicting those conditions which justify the conclusions. For some parts of the report forms are useful but since no set form can be prepared to cover individual plants a true word picture presented in narrative style is usually necessary. For the inspector's own records and for the use of those who are chosen to support his conclusions it is essential that the exposition of data shall be clear and concise and should place emphasis on the significant elements, relegating to the appendix minor matters which fill in the background of the picture.

This discussion of plant sanitation has omitted some matters that are niceties of construction and operation but not necessarily matters of sanitation bearing on filth. Drinking fountains, the use of white paint, cement construction, and the maintenance of rest and recreational facilities for employees fall in this category. The purpose of the chapter has been to discuss principles of sanitation and routes and sources of contamination with suggestions as to what may be deemed important and what may be held to be relatively unimportant with full recognition that no Manual or text can take the place of actual experience.

REGULATORY CONTROL OF FOODS AND DRUGS *

. . . More than ever before, the Food, Drug, and Cosmetic Act of 1938 gives the Food and Drug Administration powers for controlling sanitation in the food, drug, and cosmetic industries. Basically the Administration in carrying out its prescribed duties under the law has as its main objective protection of the consumer and from a sanitary standpoint, which includes not only the principles and objectives outlined in the first chapter of the text but also the macroscopic and microscopic filth which is discussed in other chapters, attention is focused on sections 402(a) (3), 402(a) (4) and 404(a), (b), and (c) of the law which deals with "pollution," "filth," and "disease" in foods, . . . Under section 402(a) (3), a food shall be deemed to be adulterated "if it consists in whole or in part of any filthy, putrid, or decomposed substance, or if it is otherwise unfit for food" and under 402(a) (4) "if it has been preparod, packed, or held under insanitary conditions whereby it may have become contaminated with filth, or whereby it may have been rendered injurious to health." These sections of the law can be used to advantage to bring about improvement in those industries where, through improper handling, filth and pollution and possibly dangerous pathogenic organisms may have been allowed access to the products involved. Furthermore, an extremely powerful regulation for the protection of the health of the consumer rests in section 404 which grants authority to the Federal Security Administrator, to establish an Emergency Permit Control over an industry when, after an investigation, the Administrator finds "that the distribution in interstate commerce of any class of food may, by reason of contamination with micro-organisms during the manufacture, processing, or packing thereof in any locality, be injurious to health***".

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* Excerpts from Chapter 14, Food and Drug Circular No. 1, 1944.

These sections of the Act which deal with the type of adulteration about which this text has been written do not call for nor in fact allow any so-called "tolerances" for filth and decomposition. . . . The inspector and the analyst should keep before them at all times the axiom that in the manufacture of a food or drug product it is the sole responsibility of the producer to see to it that the product that he is preparing for the consumer is as free from contamination as it is possible to attain. Obviously, in a commercial operation certain conditions may result in chance or accidental contaminations. However, these conditions, which are well recognized by the Administration and should be recognized by any fair appraisal, do not constitute a basis for setting up, for the benefit of the industries involved, "tolerances" for filth for the careless producer to shoot at. Fortunately, in the food and drug industries as a whole there are many producers who are well aware of their responsibilities and are not interested in the setting up of tolerances for filth and adulteration, but are only interested in getting out what they consider to be the very best product they are capable of producing. As a matter of fact, the majority of food and drug manufacturers in this country are producing foods and drugs in as scrupulously clean and desirable a manner as the consumer would expect. The inspector making an inspection must keep in mind what is considered to be good commercial practice in judging the operations in a given plant. His judgment should always be based on a wealth of experience in the food or drug industry of which the plant is a representative. Similarly, the analyst in his examination of a food or drug product collected by the inspector must give consideration, in drawing his conclusions, to the extent of the contamination he has been able to demonstrate in similar food and drug products. Even though the analyst is not responsible for the action that may be taken by the Administration, he is responsible as an expert for the interpretation of his findings. . . .

OUTLINE

FOR A

SANITARY SURVEY

SANITARY SURVEY

By _____ Date _____

Plant Name _____ Location _____

Whom Contacted _____ Position _____

* Is there an authorized person responsible for sanitation? Yes ___ No ___

* If so, name of person _____

* Number of Employees at Peak of Season: Male _____ Female _____ Total _____

* Number of Employees Now: Male _____ Female _____ Total _____

* List of Products canned _____

Product(s) being canned at time of Survey _____

_____

ADJACENT PROPERTY (Sanitary Hazards):

What is located on property _____

Flybreeders _____

Rodent Harborage _____

Opportunity for rodent feeding _____

Insects _____

Dusts _____

Odors _____

PLANT GROUNDS (Sanitary Hazards):

_____

_____

_____

BUILDING:

Type of construction _____

Number of floors _____

Floors (material) _____

* Obtain this information from Management.

Plant Name _____ Location _____ Date _____

State of repair _____

Overhead (Ceiling, etc.) _____

Paint finish: Inside _____

Outside _____

Rodent proofing _____

Screening or fly fans _____

GENERAL PLANT LIGHTING:

Adequate? Yes ___ No ___ Explain _____

_____

_____

_____

STEAM AND MOISTURE REMOVAL:

Is there any excess steam escaping? Yes ___ No ___

Explain _____

Do they have steam exhaust pipes to outside from blanchers, exhaust boxes, etc? Yes ___ No ___

Explain _____

_____

Exhaust fans? Yes ___No___ Overhead ventilation? Yes__ No__

Explain results (molds) _____

_____

Is there condensation dripping from above? Yes ___ No ___

If so, onto what equipment? _____

_____

* WATER SUPPLY: Public ____ Private ____

* Public Supply:

* Municipality or company name _____

* Health department having jurisdiction _____

* What is it used for? _____

Plant Name _____ Location _____ Date _____

* Private Supply:

* Source _____

* What is it used for? _____

Is well protected from surface contamination? Yes__ No___

Explain _____

* Type of well _____

Any source of underground contamination? Yes ___ No ___

Explain _____

_____

General Notes on Water Supply:

Is water reused? Yes ___ No ___

For what purpose? _____

How often changed? _____

Storage tanks _____ Type of Construction _____

Protection from contamination _____

* Are there any cross connections? Yes ___ No ___

Explain _____

* Is there a separate fire system? Yes ___ No ___

Source _____

* Is there any non-potable water in plant? Yes ___ No ___

Source _____

* Where is it used? _____

_____

_____

* How are employees protected from it? _____

_____

_____

Are any danger signs posted? Yes ___ No ___

Plant Name _____ Location _____ Date _____

DRAINAGE:

Type _____ Adequate? Yes ___ No _____

Do any machine conveyors etc. drain onto floors? Yes __ No __

Explain _____

_____

Is flow adequate to keep drains clean? Yes ___ No _____

Explain _____

_____

Do drains contain scum on sides and bottom? Yes __ No ___

Explain _____

General comment on drainage _____

_____

_____

Storm drainage? Yes ___ No ___ Explain _____

_____

Are there any overhead sewers? Yes ___ No ___

Explain _____

Are floors smooth and sloping to drains? Yes ___ No ____

Explain _____

_____

Does any water drain across floor where employees have to stand or walk? Yes ___ No ___

Explain _____

_____

_____

_____

_____

_____

_____

Plant Name _____ Location _____ Date _____

WASTE DISPOSAL:

* Public sewer lines _____ Other means _____

* Are public sewer lines sufficient to carry peak loads? Yes__ No__

* Are public sewage disposal and treatment facilities adequate to handle seasonal peak organic load? Yes ___ No ___

* Are floating solids removed? Yes ___ No ___

Conditions around screens _____

* How is toilet sewage disposed of _____

_____

Is it satisfactory? Yes ___ No ___

What sanitary problems and hazards are brought about by waste production and disposal? Explain _____

_____

_____

GENERAL CLEANUP PROCEDURE:

* Is wet steam available at all points in plant where product is handled? Yes___ No ___ Substitute _____

* What detergents and sanitizing agents are used? _____

_____

_____

When and how? _____

* How often are floors cleaned? _____

Describe procedure _____

_____

_____

_____

* Are bacteria counts made? Yes ___ No ___

Explain _____

_____

Plant Name _____ Location _____ Date _____

General Cleanup Procedure - contd.

How often is the following machinery cleaned? Describe the cleaning procedure. Should it be cleaned more frequently and more thoroughly during operation?

(Answer under each heading)

Belts _____

_____

Conveyors _____

_____

Exhaust boxes _____

_____

Closing machines _____

_____

Labeling machines _____

_____

Other _____

_____

Remarks _____

_____

WAREHOUSING: Private _____ Public _____

* Name and address _____

Construction _____

Floors (material) _____

Rodent proof? Yes ___ No ___

* What is stored in warehouse in addition to canned foods?

_____

_____

_____

Plant Name _____ Location _____ Date _____

Warehousing - contd.

* How are swells located? _____

* Disposal of abnormal cans _____

* Amount and type of spoilage _____

How are cans stored? _____

Are they protected against dust and filth? Yes ___ No ____

Explain _____

Were dirty cans observed? Yes ___ No ___

Explain _____

_____

General cleanliness (floors,etc.) _____

_____

INSECT AND RODENT INFESTATION:

Are there potential breeding places,particularly for fruit flies and common flies? Yes ___ No____

Explain _____

_____

Evidence of rodent or insect infestation? Yes ___ No ____

Explain _____

_____

_____

_____

* What is being done to keep rodent infestation down? _____

_____

_____

* Are poisons being used that could be dangerous in finished product? Yes ___ No ___

* How protected _____

_____

Plant Name _____ Location _____ Date _____

EMPTY CONTAINERS:

Where stored _____

How stored _____

Are undamaged containers used for purposes other than canning? Yes ___ No ___ Explain _____

_____

What protection is afforded containers against contamination?

_____

Are containers washed before being filled? Yes ___ No ___

Explain _____

Are there evidences of rodent, insect or spider infestation?

Yes ___ No ___ Explain _____

_____

Is there protection against dust and filth? Yes ___ No ___

Explain _____

* Is a sweeping compound used in container storage room? Yes __ No__

General cleanliness of area _____

ROOMS FOR PREPARING SIRUP, BRINE, KETCHUP, ETC:

Describe layout _____

_____

Is product protected from contamination? Yes ___ No ___

Explain _____

Can dirt on outside of sacks containing ingredients enter the product? Yes ___ No ___

Explain _____

_____

_____

How are empty sacks stored? _____

_____

Plant Name _____ Location _____ Date _____

BASEMENT:

Is it dry? Yes ___ No ___ Explain _____

_____

Is it used for storage? Yes ___ No ___

Explain _____

_____

_____

Is it used for other purposes? Yes ___ No ___

Explain _____

_____

Is there any rodent harborage? Yes ___ No ___

Explain _____

_____

Is there rodent infestation? Yes ___ No ___

Explain _____

_____

Lighting _____

_____

Other comments _____

_____

_____

LABORATORY:

Back syphonage or cross connections (autoclave, sink, etc.)

Yes ___ No ___ Explain _____

_____

_____

Other comments _____

_____

_____

Plant Name _____ Location _____ Date _____

DRINKING FOUNTAINS:

Type _____

Satisfactory? Yes ___ No ___ Why not? _____

_____

*How many? _____ Adequate? Yes ___ No ___

Located conveniently to all employees? Yes ___ No ___

Explain _____

Are any fountains located over sinks or in toilet rooms?

Yes ___ No ___. Where? _____

Are all the fountains clean? Yes ___ No ___ Explain _____

_____

Is water pressure adequate? Yes ___ No ___ Explain _____

_____

TOILETS: MEN: Location _____

Number of stools _____ Adequate? Yes ___ No ___

Type _____

Number of urinals _____ Adequate? Yes ___ No ___

Floors: Type _____ Clean? Yes ___ No ___ Dry? Yes ___ No ___

Walls: Paint: Light ____ Dark ___ Clean? Yes ___ No ___

Located conveniently to all employees? Yes ___ No ___

Ventilation adequate? Yes ___ No ___

Odors objectionable? Yes ___ No ___

Paper adequate? Yes ___ No ___

Light sufficient? Yes ___ No ___

General cleanliness _____

Hand washing signs? Yes ___ No ___

WASHING FACILITIES: MEN: Location _____

Convenient to toilets? Yes ___ No ___

Convenient to employees? Yes ___ No ___

Plant Name _____ Location _____ Date _____

Washing Facilities, Men - Contd.

Number _____ Adequate? Yes ___ No ___

Hot water? Yes ___ No ___ Individual Towels? Yes ___ No ___

Soap? Yes ___ No ___ Is it adequate? Yes ___ No ___

Waste containers? Yes ___ No ___ Adequate? Yes ___ No ___

DRESSING ROOMS: MEN: Yes ___ No ___

Lockers? Yes ___ No ___ Number _____

Showers? Yes ___ No ___ Number _____ Type _____

TOILETS: WOMEN: Location _____

Type _____

Number of stools _____ Adequate? Yes ___ No ___

Floors: Type _____ Clean? Yes ___ No ___ Dry? Yes ___ No ___

Walls: Paint: Light ___ Dark ___. Clean? Yes ___ No ___

Ventilation adequate? Yes ___ No ___. Odors Objectionable? Yes ___ No ___

Paper adequate? Yes ___ No ___. Light sufficient? Yes ___ No ___

Covered receptacle? Yes ___ No ___

General Cleanliness _____

Located conveniently to all employees? Yes ___ No ___

Hand washing signs? Yes ___ No ___

WASHING FACILITIES: WOMEN:

Number _____ Adequate? Yes ___ No ___

Type _____

Located _____

Convenient to toilets? Yes ___ No ___ Convenient to employees? Yes ___ No ___

Hot water? Yes ___ No ___. Individual towels? Yes ___ No ___

Soap? Yes ___ No ___ Is it adequate? Yes ___ No ___

Waste containers? Yes ___ No ___. Adequate? Yes ___ No ___

DRESSING ROOMS: WOMEN: Yes ___ No ___

Lockers? Yes ___ No ___ Number _____

Plant Name _____ Location _____ Date _____

Dressing Rooms, Women: Contd.

Showers? Yes ___ No ___ Number _____ Type _____

Cots? Yes ___ No ___ Number _____ Adequate? Yes ___ No ___

Linen? Yes ___ No ___ Clean? Yes ___ No ___

Changed how often? _____

EMPLOYEE SANITATION:

*Head covering: Women? Yes ___ No ___. Men? Yes ___ No ___

*Clothing: Women: Street _____ Special _____

Men: Street _____ Special _____

Changed at Plant? Yes ___ No ___

Laundered at Plant? Yes ___ No ___

*Is any spitting on the floor allowed? Yes ___ No ___

Was any observed? Yes ___ No ___ Where? _____

General observation of employee sanitation and cleanliness:

_____

_____

FIRST AID ROOM:

Cots? Yes ___ No ___. Clean Linen? Yes ___ No ___

Are poisons and internal medicine kept in same cupboard?

Yes ___ No ___ Explain _____

LUNCH ROOM:

Dish and utensil sanitation _____

_____

_____

Glass sanitation _____

Kitchen sanitation _____

_____

_____

Plant Name _____ Location _____ Date _____

Lunch Room - Contd.

Refrigeration and storage _____

_____

Lavatory and toilets _____

Flies - Screens _____

Rat or mouse evidence _____

Insect evidence (roaches) _____

Employee sanitation _____

Floors _____

Walls _____

Ceiling _____

Handling display serving _____

Surroundings sanitary _____

Remarks: _____

GENERAL HOUSEKEEPING:

Floors _____

Unnecessarily wet? Yes ___ No ___ Explain _____

_____

Any rubbish accumulation? Yes ___ No ___ Explain _____

_____

Any accumulation of filth in out-of-way places? Yes ___ No ___

Explain _____

_____

Are trays of open cans stacked on top of each other? Yes__ No__

Are sacks containing ingredients (sugar, salt, etc.) protected from

employees walking and sitting on them? Yes ___ No ___

Are "Keep-off" signs posted? Yes ___ No ___

ADDITIONAL COMMENTS: _____

_____

_____

INFORMATION REGARDING CANNING OF SPECIFIC PRODUCT

Plant Name _____ Location _____ Date _____

PRODUCT: _____

* INGREDIENTS: (List all) Where obtained Where stored

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

* Name those which have been fumigated _____

* What means for fumigation at the plant _____

Brief description of handling, canning and processing product:

Plant Name _____ Location _____ Date _____

RECEIVING AREA: Product: _____

Describe area _____

_____

Is area congested? Yes ___ No ___ Explain _____

_____

_____

_____

Floors _____

Cleanliness of area _____

How is area cleaned? _____

Are raw materials protected against floor and insect contamination? Yes ___ No ___ Explain _____

_____

Are steps taken to prevent heating of product in boxes or sacks? Yes ___ No ___ Explain _____

_____

Are boxes washed after dumping? Yes ___ No ___

Explain _____

Do they constitute a sanitary hazard? Yes ___ No ___

Explain _____

PREPARATION:

Washing, peeling, etc.

Is area congested? Yes ___ No ___ Explain _____

_____

Describe procedure and mach. _____

_____

Are conveyors easy to clean? Yes ___ No ___

Explain _____

_____

Plant name _____ Location _____ Date _____

Preparation - Contd. Product: _____

Are ingredients subjected to an adequate clean water wash? Yes ___ No ___ Explain _____

_____

Is disposal of water adequate? Yes ___ No___

Explain _____

Sorting and Cutting:

Is area congested? Yes ___ No ___ Explain _____

_____

Describe procedure and mach. _____

_____

Are conveyors and mach. easily cleaned? Yes ___ No ___

Explain _____

Do employees have dry footing? Yes ___ No ___

Explain _____

Light (foot candles _____ Adequate? Yes ___ No ___

Explain _____

Is area clean? Yes ___ No ___ Explain _____

_____

Blanching

Is area congested? Yes ___ No ___ Explain _____

_____

Describe procedure and mach. _____

_____

Are conveyors and mach. easily cleaned? Yes ___ No ___

Explain _____

_____

Is area clean? Yes ___ No ___ Explain _____

_____

Plant name _____ Location _____ Date _____

Preparation - Contd. Product: _____

Preheating: (Exhaust, mixing tanks, etc.)

Is area congested? Yes ___ No ___ Explain _____

_____

Describe procedure and mach. _____

_____

Are conveyors and mach. easily cleaned? Yes ___ No ___

Explain _____

Is area clean? Yes ___ No ___ Explain _____

_____

FILLING: Hand _____ Machine _____

Is area congested? Yes ___ No ___ Explain _____

_____

Describe procedure and mach. _____

_____

CLOSING:

Is area congested? Yes ___ No ___ Explain _____

_____

Describe procedure and mach. _____

_____

How is splash and slop-over handled? _____

_____

Is mach. easily dismantled for cleaning? Yes ___ No ___

Explain _____

_____

Is area clean? Yes ___ No ___

Explain _____

_____

Plant name _____ Location _____ Date _____

COOK ROOM AREA: Product: _____

Is area congested? Yes ___ No ___ Explain _____

_____

Describe _____

_____

General cleanliness _____

Are cans protected against exterior contamination?

Yes __ No __ Explain _____

Are thermometers clean and visible? Yes ___ No ___

Are cans immersed in water for cooling? Yes ___ No ___

Is water clean? Yes___ No ___

Is water re-used? Yes ___ No ___

GENERAL COMMENTS ON PREPARATION, P ROCESSING, ETC.

Is there possibility of contamination of ingredients at

any point? Yes ___ No ___ Explain _____

_____

_____

_____

SPECIFIC P RODUCT WASTE DISPOSAL:

Where does waste accumulate (sorting and trimming tables, corers, pitters, snippers, cyclones, overflow at filler, etc.)

_____

_____

_____

_____

Type container in which waste is collected _____

_____

_____

Plant Name _____ Location _____ Date _____

Specific Waste Disposal - Contd. Product: _____

* How is waste disposed of? _____

_____

_____

_____

Comments: _____

_____

_____

SPECIFIC CLEAN-UP PROCEDURE:

* Note if equipment is left hot or cold _____

Describe clean-up procedure for:

Preparation tables _____

_____

_____

Washers (immersion, rotary, spray etc.) _____

_____

_____

_____

Blanchers (immersion, rotary, steam etc.) _____

_____

_____

_____

Peelers (lye, abrasion, steam etc.) _____

_____

_____

Cutters, slicers, dicers, snippers, pitters, corers.

_____

_____

Plant Name _____ Location _____ Date _____

Specific Clean-up Procedure - Contd. Product: _____

Graders for size _____

Pans and sinks _____

Pipes, flumes, screw conveyors, elevators _____

Pumps _____

Tanks, hoppers, kettles _____

Pasteurizers, continuous preheaters _____

Homogenizers _____

Cyclones, disintegrators _____

Plant Name _____ Location _____ Date _____

Specific Clean-up Procedure- Contd. Product: _____

Presses (including cloths and racks) _____

Fillers _____

Sirupers _____

* Is sirup recovered and re-used? Yes ___ No ___

If re-used, method of filtering and treating _____

Other equipment _____

Comments _____

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